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IN THREE SECTIONS

Section I

N.A.C.A. LIBRARY

THE NATIONAL ASSOCIATION OF COST ACCOUNTANTS
PROPERTY OF
NEW YORK CITY

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EDITORIAL DEPARTMENT NOTE

Depressions are productive of business failures, unemployment and misery, but they are also productive of the improved business methods which make it possible for the better managed concerns to weather the period of adversity and attain greater effectiveness in the succeeding period of better business. Many of our most valued improvements are forced upon us; their worth is not appreciated until conditions force their adoption. The first article in this issue of the Bulletin is a good example of how adverse economical conditions can bring a concern to adopt methods which probably would not have been adopted at all or for some time had business continued along profitable lines. It is interesting to note that a plan installed originally to give up-to-date statistical information has proven most valuable from a control and managerial viewpoint.

The author of this first article is Sidney W. Gould, Secretary of the Lomas & Nettleton Co. of New Haven. Mr. Gould attended the University of Wisconsin and is a graduate of the United States Military Academy at West Point and of the Massachusetts Institute of Technology. Prior to his present position, Mr. Gould was in the Corps of Engineers, United States Army. His paper was delivered before the New Haven Chapter.

Recently we have been hearing quite a little about the trend away from incentive plans of wage payment. In the second article in this issue of the Bulletin we have a critical analysis of this trend and a discussion of the underlying causes and probable effects. The author of this article, R. F. Whisler, is well qualified by training and experience to write on this subject. He began his business experience during high school and college days with the National Cash Register Co., Delco Products Corp., and the Maxwell Motor Car Co. Following three years' training in the College of Engineering at Ohio State University, he gained additional experience with the Jeffrey Manufacturing Co. of Columbus, Ohio, the Joyce-Cridland Co. of Dayton and the Carolina Power and Light Co. of Raleigh, N. C. During a part of the War period Mr. Whisler was stationed at Army Engineering Headquarters at Washington; one year of this period was spent in France on Ordnance Engineering work. At the end of this period Mr. Whisler returned to Dayton to work for the Frigidaire Corp. and the Dayton Steel Foundry Co. before joining the National Cash Register Co., in 1920. For the last fifteen years he has been Head of the Standards Department of this company.

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NATIONAL ASSOCIATION OF
COST ACCOUNTANTS
NOVEMBER 15, 1935

THE APPLICATION OF TABULATING AND ACCOUNTING MACHINES TO REAL ESTATE AND MORTGAGE ACCOUNTING PROCEDURE

By Sidney W. Gould, Secretary
Lomas & Nettleton Co., New Haven, Conn.

IT is with considerable trepidation that I come before you, because I have always felt an awe for accountants to say nothing of cost accountants; who, I presume, reach such heights of mathematics that the ordinary layman is lost. However, my presence here can be justified by the fact that I am talking my own shop, and I will begin with Genesis.

Genesis, in this case, was the famous year of 1929 when the world was remade in seven days, and when we all got sick with a mysterious disease. We have been hearing ad nauseum, the symptoms of the ailment, and millions of witch doctors prescribing mumbo-jumbo of one kind or another for its cure. I have my own ideas of the disease. It was undoubtedly megalomania compounded with acute-elephantiasis, if you know what I mean. The cure, I suspect (excepting another vicious epidemic of war), is the most commonly given of all medicines, namely, sugar pills with a little alcohol, and allowing the patient to get well or die. If the patient has the will and constitution to get well, he will do so. However, the first requirement is that the patient must realize that he is sick. In 1929 many people didn't have that first realization. The symptoms persisted for a long time, without recognition, and consequently the convalescence has been protracted even unto this day.

Our business had some of that momentum of past belief also, but I think we did realize we were sick even before our banking institutions began to collapse around us. So much for our hindsight philosophy. We are here to look at this matter from an accounting point of view, but parenthetically I might say here that the accounting point of view did not help to ameliorate the disease. Brilliant as the accountants were, they aided undoubtedly in compounding the felony. Their brilliance was best demonstrated in the financial statements of holding companies which were magnificent examples of black magic at its best, or worst.

Accounting System in Use

Our own accounting system at the time was a joke as we look back on it now, but it functioned at low cost to operate a $25,000,000 business in investments. At that time, we needed no machinery or gadgets to perform the simple operation of collecting and distributing interest. We did have a very good accounting brain in our senior, Mr. Lomas, who had a cost accounting system dating back to 1911 *in an investment business.* He knew what it cost to distribute his investments and care for them. In the period of acute competition in the 20's he once stated to me that low-cost operation would succeed as against high cost; competitors and time have proved he was right. We are one of the few relatively large mortgage companies still operating under its own power.

1929 arrived and upset many apple carts—containing in addition to apples, melons, and lemons, in various stages of decay. Real estate mortgages in vast numbers began to default on interest after partially concealed defaults on taxes had gone on for some time. We were aware of tax defaults, but could not see our way clear at that time to start action. But, as the deluge continued, it became our duty to get control of whatever income the property had, and see that it was applied to the interests of the fundamental encumbrance, the first mortgage. I spent two years of my life talking to owners of apartment houses, insisting on assignments of rents or foreclosure.

It was not until the middle of 1931 that we adopted finally and firmly the policy that no interest was to be paid, until we had cleaned up all back taxes. That policy has proven a good one in spite of the protests of the investing public.

Use of the Boston Ledger

We first adopted a monthly statement form on which owners submitted operating reports of their own property. These were posted to a columnar Boston ledger to obtain some analysis of the owners' expenditures. This worked fairly well, until the weaker properties were dropped in our lap, the owners not being willing to continue operations—after we had stopped the milking away of income. The situation reached a new complexity—our operation of the properties. Of course, we received at that time

the worst of the real estate to manage, but it was good experience even if it was expensive. You can see, I think, the accounting problem that was thrust at us in these two new forms.

Our investors showed remarkable patience as a whole, in not asking us for too much information at a time when we had our fingers in literally hundreds of holes in the dike. After a fashion, we did give information—in a crude form to be sure, but relatively accurate. I was not satisfied with this, however, as I wanted to give investors future hope if I could not find present dividends for them. So the necessity arose of trying to forecast the future of the holdings. It was impossible to forecast the future without having figures of the past as a guide. And as we had no figures at all, we could not arrive at a sensible conclusion until we had established them. All of this for control purposes meant classifying income and expense in a fixed way in order to make these comparisons and prognostications. Thus you may see that foretelling the future was an essential and not an accounting refinement.

Problem Complicated by Trustee Relationship

All of this was again complicated by the fact that we were a trustee acting for a large group of mortgages, and each mortgage was a separate trust. We could not lump all receipts and disbursements in one hopper, as a savings bank or insurance company could. This was our problem and as it turned out also our salvation, inasmuch as solving the problem solved a large group of collateral problems and solved the control problem of real estate management as well.

At this point, the manual accounting system began to creak like an old wheel without grease. The pressures from investors for information began to grow clamorous and while we were auditing the accounts of each building manually, we were getting information on 1932 operation late in 1933. This was no good from our point of view, as we desired a much quicker control of agent management, so that weak spots could be taken care of promptly and management cures applied. At this point, it was evident that clerical help making postings on old Boston ledgers were making endless errors in expense and income classifications. The enormous amount of rents in arrears was a Chinese puzzle.

The old rent book in the face of 4,000 to 5,000 monthly rents was an antique, and clerks without a genius for proper guessing were lost in a mire of figures.

Use of Punched Cards Suggested

Late in 1932 in the *National Real Estate Journal* appeared an article by two young New Yorkers, Mr. Silver and Mr. Burnhard, about an application of punched-card machines to real estate problems. These two men were trying to make order out of chaos in the New York Title & Mortgage Company office in New York. Their problems were the same as ours, but on a vaster scale. Nearly a billion dollars of mortgages were represented in this one plant and the job of the spade work of reconstruction was in the hands of a few young men. The executives of the company were too tired to solve these problems, after doing their share to make the mess, or they were looking for new fields to conquer. Those of you who read the New York papers will undoubtedly remember that the mortgage companies were taken over by the Insurance Department of the State of New York for rehabilitation, and on the whole a very good job was done.

After studying the New York situation and consulting with company representatives the decision to install punched-card accounting was made. You must understand that there was only one actual installation in the United States for real estate management, and that had only begun. With this little start, we began to work. We were on virgin soil, and the trees had to be cut down, stumps pulled, brush burned, roots pulled out with a plow, before we could get a crop. None of us could know completely what was before us. But we set to work, forms were made, and a card design established. Here we made our first mistake of major importance, and the card illustrated here is the third card designed in one year. If any of you have had experience with accounting machines of this character, you will know what that means. It means that we performed three major operations on the patient in one year. We removed the appendix, the gall bladder, and the tonsils, and the patient still lives.

A Beginning Is Made

About December of 1933, we were ready to go. Then perhaps

you can imagine what happened in an office that had been doing business the same way for forty years. The birth pangs and delivery and the screeching of the infant accounting child must have sounded like the yelps let out by Pantagruel that Rabelais tells about with so much gusto. To chaos we had added bedlam and doom. We struggled along until the middle of January, when Mr. Ross and I, not wishing to see our daily balances (so carefully run for many years) completely demoralized, decided to take a run of all the accounts. And then we learned something. We had to run debit and credit items separately and for each day's work. The debit and credit items for each property had to be put together, naturally, for a balance, and this meant endless hand figuring to accomplish. We made our first card change, designing them so they could be used together, and this was of great importance. It finally was done and that major problem was solved. Then a brilliant idea had birth. We wanted to balance the accounts monthly carrying over trial balance totals. How to get it with the same card (a credit card) actually going debit at the end of the month to strike this balance? When this was achieved by our tabulating machine man, one of our major problems was solved.

By this synchronization and trial balance method had been created a bookkeeping machine. One more card change was made the first of this year to reduce our code and further synchronize other applications of the machines to mortgage control inventories, interest collections, insurance collections, etc., which will be touched on later.

I have given you a sketch of our trials and tribulations. We thus leave the drama of getting started and take up the technical angles. We start with the cards, shown in Exhibit 1. The lower card is used for income transactions, the upper for disbursements. We will not go into the mechanism of punched-card accounting. You have seen cards punched, and marvelled at the accounting machine at work. Now let me describe how these cards are used.

Master Cards for Income

Master income cards are punched for each tenant, and set up in a rent file. These master cards are changed only in accordance with tenant changes. The cards are punched as follows:

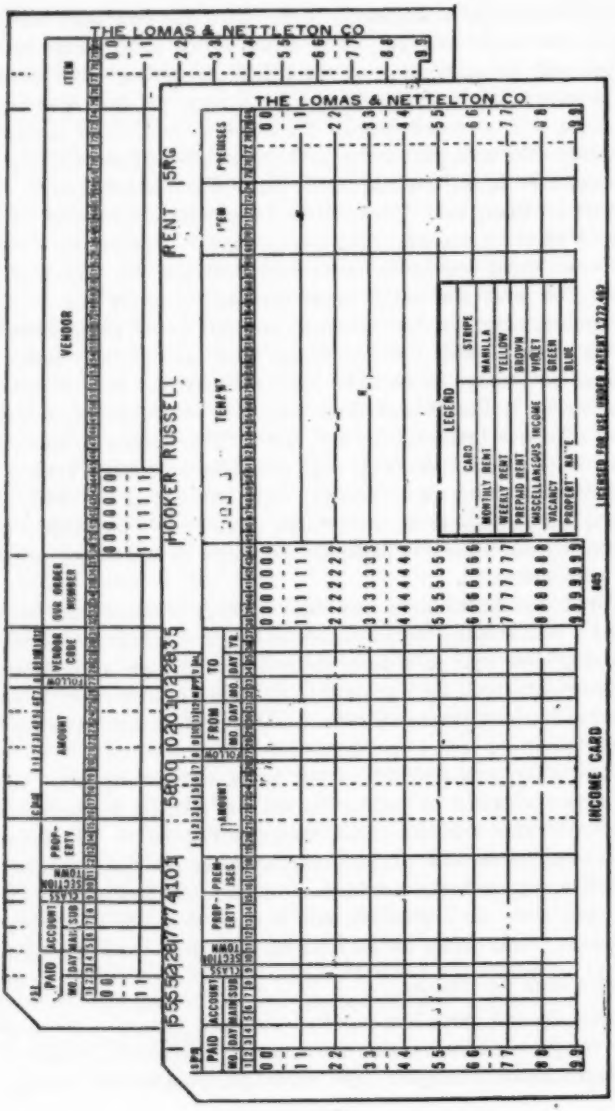

THE LOMAS & NETTLETON CO
HOOKER RUSSELL
RENT
INCOME CARD
LEGEND
CARD
STRIPE
MONTHLY RENT
MANILLA
WEEKLY RENT
YELLOW
PREPAID RENT
BROWN
MISCELLANEOUS INCOME
VIOLET
VACANCY
GREEN
PROPERTY
BLUE
LICENSED FOR USE UNDER PATENT 1,372,482

EXHIBIT 1

1. Account code, indicating in this instance that the cards are rent cards.
2. Property code class; large properties under our own management being coded 1, and small properties 2; large properties under outside management 8, and small properties 9.
3. Section, defining the section of Connecticut in which the property is located.
4. Town within the section.
5. The property code itself which permits automatic sorting into location alphabetically by street and number.
6. Premises—location (apartment) within the building.
7. The amount of the rental.
8. From and to dates of rental period, i.e., from 3/1 to 3/31/35.
9. Tenant's name.
10. The items such as rent, maid service, etc.
11. Accommodations, i.e., 5RG meaning 5 rooms and garage.

A Rent File Prepared

We close on the 26th of each month. The rent file is put into a high speed reproducer, which without manual effort, reproduces the rent file with the exception of dates which are changed automatically to the current month for which the rent is about to become due. Thus, in the period of an hour we have set up our accounts receivable for the current month and this process is repeated every month without any further manual punching of cards. We combine the current cards with the open items in our accounts receivable file and begin the production of reports.

Statement of Rents Receivable

Our first run we call "Statement of Rents Receivable." It shows by section, town, building and tenant:

1. The amount of arrearages.
2. The current rent.
3. The vacancies and their potential value.
4. The total rent (Items 1 and 2).

We compare each month's arrearages and know immediately if the situation is getting out of control or improving. By the ratio of arrearages to current rent we have a control figure as to percentage of collections to what should be collected each month.

From this statement we are able to determine the percentage of occupancy, and what our commissions will be monthly; with a year's figures available we can forecast our rental policies.

The vacancies cards are dated the same as tenant cards, and a run of these cards will give for each area very quickly what it has to rent and how old the vacancies are. What a difference from the old rent book!

Further Uses of Income Cards

The total rents collectible at the beginning of each month, broken down by sections, gives the control figures which each office must work to each month and with which the bills made must agree. Incidentally, all bills remaining unpaid at the end of the month must agree with the arrearages carried forward.

The gross income is not strictly accurate as janitors' apartments are not included, but monthly statements of the gross by buildings, sections and state are run and the control is set up so that apartments can not be lost. With large volume this is very essential.

The same cards next produce the bills themselves in duplicate. The accounting machine prints about 4,000 bills in an eight-hour day. As shown in Exhibit 2 they are self-explanatory, except that this illustration does not show the left-hand third of the form which contains the tenant's name and address and is prepared for use with window envelopes.

Collateral reports prepared for each month's business show the collections for each property, by sections for office control, and the percentage of collections to total amount due. This you will see is a great stimulus to the offices, since each office wants to have the best figure for collections.

After the tenth of the month, the remaining unpaid cards are run, and a collection list is made in less than an hour for each office in the state. Then these offices get busy on tenants who are in arrears.

I have already mentioned the vacancy run which, like the collection run, takes about an hour and is used to prod the salesmen into greater activity. A tenant list by numbers is easily made from the statement of rents receivable and a great deal of information is derived here. We know in two ways, by amounts

CASHIER'S RECORD — THE LOMAS & NETTLETON CO. REAL ESTATE DEP'T

FOR	PREMISES	AP'T	FROM MO.	FROM DAY	TO MO.	TO DAY	TO YR.	AMOUNT DUE	TO MO.	TO DAY	TO YR.	AMOUNT	CODE
RENT	SRG	101	1	1	1	31	35	5800	1	31	35	5800	228 7774 101
RENT	SRG	101	2	1	2	28	35	5800	2	28	35	5800	228 7774 101
								* 11600				* 11600	
228	7774	101											

N. B. PAYMENTS NOT MADE AT OFFICE ARE AT TENANT'S RISK UNTIL RECEIPT STAMPED BY US IS RETURNED.

PLEASE PAY LAST AMOUNT IN THIS COLUMN SHOWN BY STAR →

PLEASE RETURN THIS STUB WITH YOUR REMITTANCE

EXHIBIT 2

THE LOMAS & NETTLETON CO.

PROPERTY CARDS (1) (2)
INTEREST CARDS (3) (4)
INSURANCE CARDS (5) (6)
MORTGAGE CARDS (7) (7A)
TAX CARDS (8)

(1) VENDOR (2) OWNER OF PROPERTY (3) TAXES (OWNER) (4) INSURANCE COMPANY
(5) TENANT (6) INVESTOR (8) ASSURED
(9) (7) (8) LOCATION OF PROP. (9) POLICY NO. (7) LOCATION OF PROPERTY (9) ITEM (9) ITEM

	HAAS SHAMPOO RUG			
	WISE SMITH DRAPES	DISHES		END
	WRIGHTMAN H		RENT	
	BARICAK ANDREW		RENT	
	LARAIA P REDECORATE	APT		
	LARAIA P REDECORATE	APT		
	LARAIA P FLRS			VARNI
	GUTHART PAINT			
	GUTHART PAINTS	WALLPAPER	ETC	
	GUTHART 1 DRAIN	GUARD		
	DUCHARME		RENT	
	DEVINE ELIZABETH		RENT	
	TUCKER SAMUEL		RENT	
	GILMAN B INST	SHELVES IN	KITCH	
	HOFFMAN COAL	BITUM COAL		
	FRANT T NIPPLES	ELBOW PLUGS		EL
	CLAMP CHECK GAS	RANGE		
	HENRY REPAIR PLU	SHOMETER		
	GUTHART 10 PORC	SOCKETS		
	CLAPP TREAT 1	SHOVEL		
	TONKENSON AGNES		RENT	
	NIELSEN G SAMPLE	KEYS		
	CAPITOL LMBR LUM	BER		
	LURIE RAY		RENT	
	DELEO ANNA		RENT	
	BURNSIDE DAVID		RENT	
	CAPITOL LMBR LUM	BER		
	BENNY REP LEAKY	BATHRM PIPES		
	LOW SUP 1 BAG AS	BESTOS FOR CVH		
	LOW SUP PLBG MA	TERIAL TLT	REPA	
	HUFFMAN COAL	BITUM COAL		
	PARKVILLE COAL	BITUM COAL		
	DESPARD JOHN		RENT	
	WEINSTOCK J B		RENT	
	BLUMBERG CHARLES		RENT	
	LEVENTHAL LEWIS		RENT	
	SARADIN MARY		RENT	
	NIELSEN FRONT DR	KEYS		
	MILLER REPL PLUS	H VALVE		
	CONN RIVER SAND	CO 3 BAG	S	SAND

EXHIBIT 3 (Left Half)

and by tenants, the percentage of occupancy in the various classes of property in each town and office, and for the state as a whole.

A very valuable report is made showing the numbers of tenants in and out, so that we know the turnover. This has been staggering, and indicates clearly that a leasing policy is essential from both income and expenditure standpoints.

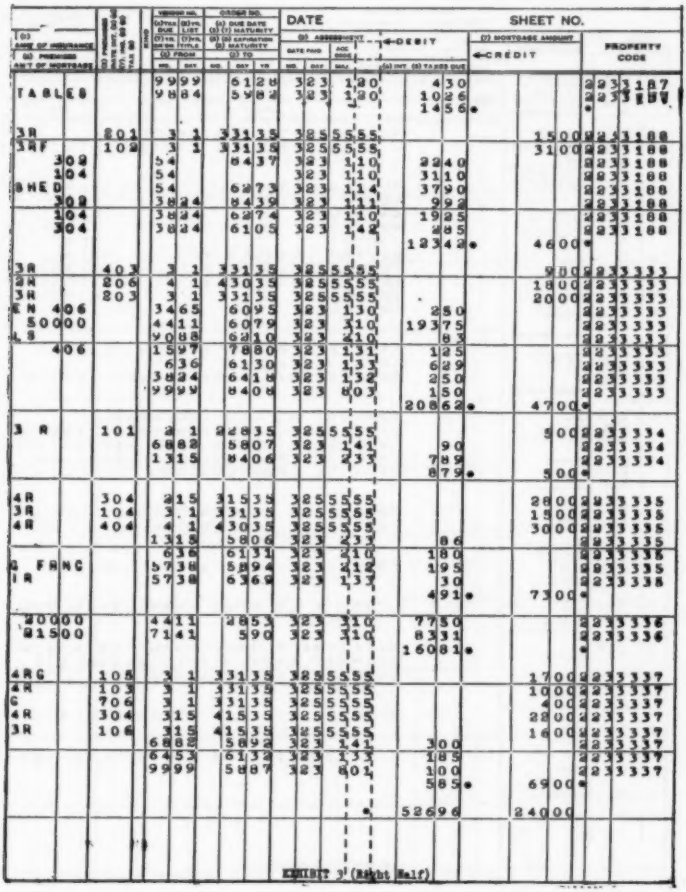


EXHIBIT 3 (Right Half)

We can easily differentiate between current rent and other income by the code numbers, and we know for auditing purposes how much back rent is received, how much errors in expense are credited back, how many insurance rebates we get, etc.

Compare this with the use of the old rent book and enough is said. You may see how almost impossible it is to have office

BRANCH OFFICES
HARTFORD — 18 ASYLUM ST.
STAMFORD — 322 MAIN ST.
BRIDGEPORT — 33 COLEMAN ST.
BRISTOL — 22 HIGH ST.
WATERBURY — 174 WILLOW ST.
NEW BRITAIN — 152 PROSPECT ST.

CODE - CLASSIFICATION

THE L

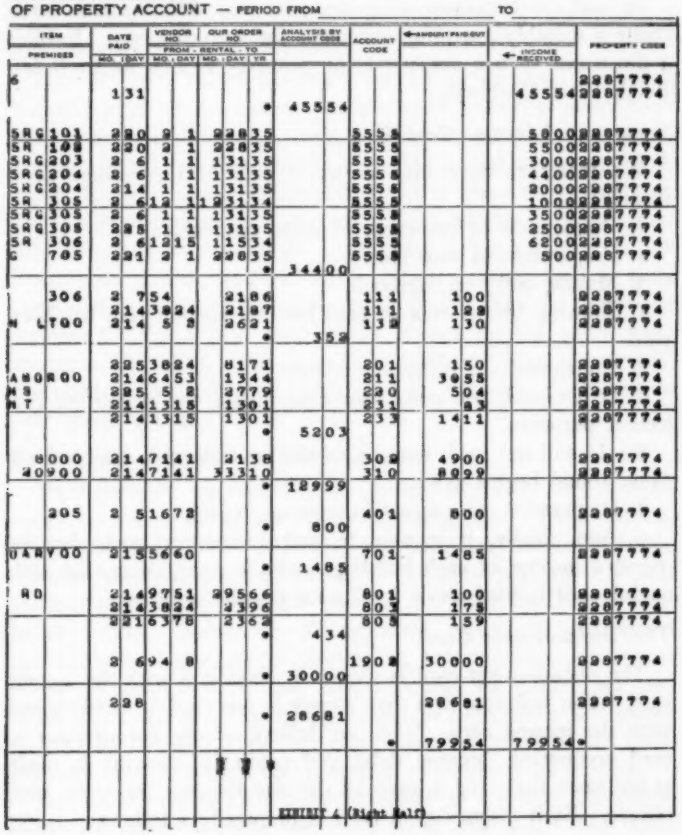
STATEMENT

VENDOR / TENANT	FOR
40 ROBIN RD WEST HARTFORD	
L N CO TRS CR 1 31 35	ASSIGN
HOOKEM RUSSELL	RENT
KEMPF DAVID L	RENT
CANNELL	RENT
NAULTY	RENT
NAULTY	RENT
BEVIEW CHARLES W	RENT
BEVIEW CHARLES W	RENT
BEVIEW CHARLES W	RENT
HAMMOND	RENT
CAPELLE	RENT
LAHAIA P PAINT SASEBOARDS	
GUTHART PAINT	
BATTISTINI LOCKUN GUARD	INST G
GUTHART 50 LBS ASBESTOS	
MILLER STEAM TRAPS VALVE	AND L
BATTISTINI INST XMAS DEC	ORATIO
CAPITOL LMBR WHITE OUTSI	DE PAI
CAPITOL LMBR LUMBER	
PARKVILLE COAL NUT COAL	
PARKVILLE COAL BITUM COAL	
COFFEY T H APT ALLOW JAN	SERV
L AND N CO RENT COMMISSION JAN	
WILLIAMS B TAKE HANGE TO ROBIN	
GUTHART SNOW SHOVEL BROOM ETC	
MENSICKS BULBS 1 DOZ	
W HTFD TAX COLL AC 1933	LIST
L N CO TRS CR 2 28 35	ASSIGN

EXHIBIT 4 (Left Half)

defalcations, and how easy it is to maintain central office control, as all accounting beyond the immediate collection of rents is centralized in one place. The income side control, marvelous as it appears to us now, and the thing that led us to machine methods originally, is probably less than half of the result obtained as you will see when we discuss the disbursement side of the picture.

OMAS & NETTLETON CO.
MOR GAGES & REAL ESTATE
ITS ORANGE ST., NEW HAVEN, CONN.
OF PROPERTY ACCOUNT — PERIOD FROM TO



Cards Used to Produce Day Book

As the rents are paid, the corresponding cards are pulled from the receivable file. Together with the daily disbursement cards they produce the day book mechanically. As you will see from Exhibit 3, we have for each building itemized entries of all

income and expenditures. These, in turn, are summarized on the same run into section and grand totals for the day.

As will be explained later the paid and disbursement cards create a monthly operating statement for each property. Exhibit 4 illustrates such a statement for property located at 40 Robin Road, West Hartford.

Summary of Income Card Uses

We therefore have nine or more uses of the income card, namely:

1. Preparation of statement of rents receivable.
2. Preparation of rent bills.
3. Making entry on day book.
4. Showing by presence in paid file that current rent has been paid.
5. Preparation of collection report.
6. If not paid, two more uses arise during the month for collection purposes.
7. If still not paid, remains in the next month's sum and the same round begins again.
8. Preparation of property operating report.
9. And, finally, it is used to make summary cards for the month's income of each building, and the poor, worn, but still-useful card is filed away for future possible reference.

The Disbursement Card

The disbursement card is shown in Exhibit 1 with the income card. You will note first that, except in one field, it synchronizes with the income card. This, we believe, is our contribution to card accounting, because debit and credit information is made at the same time, and is used all the way through the entire procedure. Each disbursement card is prepared as follows:

1. The card is punched with the date of payment, but unlike income cards it is not X punched. Cards without the X punched are debits, those with X punching are credits.
2. The account code is punched.
3. The property code is entered. A careful check of this code is made for each expense so that it will be applied to the proper building.

4. The amount of the disbursement is entered.

5. Next we have a vendor's code, which is punched into the card automatically (as is the name) from a master code card.

The Investor Is Kept Informed

Now we come to the investor's side of the picture. He wants to know what has happened. On the small properties every *three* months (and on the large, each month) the cards of each property are sorted together and the operating statement is run. This report itself is similar to Exhibit 4 and is given to the investor. On the large properties at the end of six months the last use of the individual card is made. Summary cards are run for all income per month, and all major expense items, and an audit statement is prepared on a form no bigger than the operating statement. From this, our auditor makes up the short form shown as Exhibit 5. The experience of the building is now concentrated on one piece of paper, and an estimate of the future year ahead given.

Uses of the Information Thus Obtained

Now note the expense figures on that report. They are divided the same as on the operating statement. These we call major accounts. At the left of the operating statement is the account code plus some of the minor breakdowns, and it is here as cost accountants that we come to the most fascinating part of the study. Before the disbursement cards are summarized as mentioned above, all, regardless of property distinctions, are sorted by account code, and then separated by classes and sections, and a report is run giving totals for each major and minor account by offices. These are then assembled together for comparisons, and a perfect encyclopaedia of information results.

We know how much money we spent as a whole for water, electricity, janitor service, etc. We know how much these costs were in each area, and by dividing by the number of apartments in each area, we learn the odious or satisfying fact of what was spent by each office. We break this down to averages per apartment and our prophesying powers are shown to be nothing but common sense based on a mass of statistical data that is hard to refute.

And we know at last how much should have been loaned on

THE LOMAS & NETTLETON COMPANY
175 Orange Street, Corner Court Street
NEW HAVEN, CONNECTICUT
Code 2-28-7774

REAL ESTATE MANAGEMENT DEPARTMENT
DIVISION OF ACCOUNTS

Property #40 Robin Road, West Hartford,
Name on Note Robert W. Morrissey
Present Owner " " "
Original Loan $ 27,000. Balance Und'd $ 26,000.
Present Status Assignment of rents
Tax Assessment 1934 List $ 29,510
Apartments Rented 6 Vacant none Total 6
Total No. Rooms 30 Average Mo. Rent per Room $ 14.36
Income Fully Rented per Month $ 359. per Annum $ 4,308

Date of Audit Feb. 14, 1935
Date of Mortgage Mar. 5, 1924
End of Extension Mar. 5, 1932
Assignment of Rents Aug. 1, 1932
91 % of Gross Rent
Estimated for Ensuing Year

Code	Item	Operating Statement From Jan. 1, 1934 To Dec. 31, 1934		Annual Estimate From Jan. 1, 1935 To Dec. 31, 1935	
A	Cash on Hand				
B	Rental Income	4,062.00		3,900	
C	Miscellaneous Income	120.00			
D	Due L. & N. Co.				
	Total Receipts		4,182.00		3,900
1	Tenant Repairs	521.87		350	
2	Building Repairs	680.35		250	
	Total Repair Cost		1,202.22		600
3	Fuel	541.19		535	
4	Janitor	599.00		430	
5	Water	74.18		80	
6	Electricity	144.66		145	
7	Management Commission	204.68		305	
8	Miscellaneous Expense	28.72		175 (A)	
	Total Maintenance Cost		1,592.43		1,530
9	Taxes	1,000.00		546	
10	Insurance	52.14		160	
11	Interest Paid %	----		----	
12	Betterments	40.00		----	
13	Trustee Fees to	----		130	
	Total Fixed Charges		1,092.14		836
E	Due L. & N. Co. 1/1/34		27.80		
F	Cash on Hand 12/31/34		267.41		
	Total Disbursements		4,182.00		2,966
	Net Earnings for Year 3.59 % Yield on Mortgage Amount			(B)	934
F	Cash on Hand 12/31/34				267
D	Due L. & N. Co.				
G	Past Due Taxes Bal. 1933 11st			451	
H	Estimated Debt				
I	Estimated Balance for Interest			750	
				1,201	1,201
	Expected Interest Yield for Year			2.88	

(A) Includes estimate of foreclosure costs.
(B) Net earnings have doubled during the past year under our management.

EXHIBIT 5

a building because we know accurately how much that building costs to administer. And finally we can make an extremely intelligent estimate as to what this building is worth today, what it is liable to be worth five years from today, and what various differences in income and unbalanced scales will do to a financial set-up.

Thus, out of the most chaotic and individualistic business in this country, real estate, the germs of another big business are

thriving in the culture of large masses of real estate for the first time centralized in business hands for business purposes. The operator can talk turkey to the tax collector and assessor because he knows what he is talking about. He can talk turkey to the utility executive because he knows comparative costs for light, fuel, and water in different communities. He can buy in quantity (as we are buying 1,500,000 gallons of oil) at attractive prices. And this can be amplified to paint, paper, soap powder, and the ubiquitous light bulb. He learns that fuel costs can be studied in comparison with other properties because he knows what the average should be. He knows more intelligibly whether it is sensible to buy stokers, blowers, oil burners, and what not. All this lies within the province of management, and the original tool, the tabulating machine, has made this readily obtainable.

The Future of Real Estate

It may be well in choosing this rather technical talk to indulge in the usual flights of imagination; to indulge in a little further prophecy of real estate in the future. First I believe every man should own his own home, or piece of farm land bought, not at speculative prices (and it is possible these days), but at prices lower than it would cost to build. If it has a mortgage on it, budget as part of your expenses—not capital—as much amortization as you can, to get it free and clear of debt, and then own the land in fee simple. If inflation comes, real estate on which everything is based after all, cannot be harmed as much as securities—unless we are going communistic and land is to be collectivized. Investments based on land first mortgages (and not subsequent incumbrances) are only one step removed from ownership, and should suffer least from inflation as they are the heart of our savings and insurance companies. If taxation on land can be brought under control, as now seems possible, real estate should resume its health and be one of the best investments for the average man. Large properties—apartments, offices, and central real estate—if they have good management, should prove one of the soundest investments known to us, if the appraisers of the future will only remember the past. And this resource so close to our lives can be made the best and last defense of the somewhat democratic form of society we live in.

SHOULD WE CHANGE OUR WAGE PLAN?

By R. F. Whisler, Head, Standards Department, National Cash Register Co., Dayton, Ohio

IT is my observation, after five years of membership in the N. A. C. A., that cost accountants have a great deal to do with wage incentives. In fact, in many organizations they have full supervision of it, and in all industries they are vitally interested in their successful operation. This paper is presented as a review of the trends during the past two years toward changes in the field of incentives. It is hoped that it will be received as a friendly discussion between a factory man, who has spent a number of years in the study of the wage problem, and his close associate, the cost man, who has a great deal to do in keeping up with his own field of activities, but who may also be directly interested in the operation of wage incentives.

We hear a great deal today about the effect of the "new social order" on business, industry, agriculture, economics, etc. If there have been such changes and any accompanying effects, it is for each of us to judge. There is, however, actual evidence in one field of industrial management that there are certain influences at work which have resulted in enough changes that it can be said that there is a definite trend to change wage incentives. This may be only a flurry; it may pass in a year; it may not. Nevertheless, we should all be alert and keep a finger on the pulse of the thing to be ready to meet it if it comes our way.

Operating a factory ten years ago without a wage incentive plan may be considered similar to crossing the country in a horse and buggy. Industrial engineers developed strong selling points and many industries rushed into wage incentive plans which caused them grief. The old, straight, piecework theory was stripped of its simplicity and many gaudy forms of bonus and premium plans were brought forth bearing what were, sometimes, attractive names.

Wage Plans and Rates in Russia

Then came modern Russia. Its great industrial plan had no place for our money grubbing ideas. Men would produce, prompt-

ed by a great sense of social service to his fellow men. The first five-year plan has passed, the second is under way, and now Russia has found that trained workers should receive more than untrained workers; that material reward is the greatest incentive, after the novelty of the job wears off. So today we find some very good applications of wage incentives in Russia.

The *U. S. Monthly Labor Review* for January, 1934, gives a report which states that Russia's incentives or "productive wage" system provides that standards be set on each job, and as the worker's output increases, his day rate is increased proportionately. The results obtained there are equal to, or in some cases better than, what we have experienced in this country. From September, 1931 to December, 1932, wages rose 15% and production 56%.

The following classifications, while not directly related to the subject, provide interesting material for us to use in checking our own wage structures. Occupations in Russia are listed in one of eight wage rate classes; class one being the lowest. The percentage indicates the relative values of the rates in each class. If the lowest rate is 30c, then the highest wage rate would be $1.08, as determined by the Russian Wage Rate Scale.

WAGE RATE CLASSES

Class I—100%	Class V—192%
Class II—115%	Class VI—235%
Class III—135%	Class VII—290%
Class IV—160%	Class VIII—360%

The following figures indicate to what extent Russia has adopted wage incentives:

On Jan. 1, 1932

Chemical Industry	—54%	Piecework
Coal Mining Industry	—67%	Piecework
Machine Bldg. Industry	—63%	Piecework
Metallurgy Industry	—63%	Piecework
Oil Industry	—24%	Piecework
Needle Industry	—84%	Piecework
Paper Industry	—61%	Piecework
Woodworking Industry	—60%	Piecework
All Industries	—64%	Piecework

Japan's Wage Rates

Now comes Japan. No plan like Russia's, but an intense national spirit. Yes, more than that; a desire to live and die for Japan. Sacrifice all, set aside personal comfort, luxury, etc. A

great family spirit that reaches out and includes all of Japan in one great family. Japan as we all know, is rapidly modernizing her industries in regards to methods, equipment, processes, etc. But what of her wage system? The *U. S. Labor Review* for June, 1934, shows the following:

JAPANESE WAGE RATES

For 10-hour day, 6-day week.

Carpenters, etc.	—56¢ to 69¢ per day.
Domestic (male)	—$3.73 per month.
Domestic (female)	—$2.92 per month.
Food Industries	—44¢ to 65¢ per day.
Farm Laborers	—18¢ per day.
Laborers (male)	—38¢ per day.
Laborers (female)	—22¢ per day.
Machinists	—63¢ per day.
Matches	—14¢ per day.
Molders	—62¢ per day.
Paper Makers	—40¢ to 50¢ per day.
Pencil Makers	—38¢ per day.
Plumbers	—30¢ per day.
Printers	—50¢ to 65¢ per day.
Tailors	—52¢ to 62¢ per day.
Textiles (female)	—20¢ to 23¢ per day.
Toolmakers, etc.	—68¢ to 72¢ per day.
Toys	—35¢ per day.
Shoemakers	—52¢ to 62¢ per day.
Woodworkers	—44¢ to 60¢ per day.

Now we can better understand why you can buy such unusual things at such low prices (including 100% duty, etc.) but marked "made in Japan."

What do these two extremes, Russia and Japan bring us to conclude? That each nation has its own conditions to meet and cannot follow others? That we had better not throw over one of the fundamentals upon which America's industrial supremacy has been built? That we want to preserve by all means wage levels in the United States as compared with other countries? That we want to improve the wage earner's income to not only secure for him a high standard of living but to create for industry a greater market for its products?

The *National Republic* for August, 1933, shows the following interesting report:

Average Wages of World

U. S.	$26.30 per week.	Belgium	$5.21 per week.
England	11.37 per week.	Japan	5.37 per week.
Sweden	10.20 per week.	Hungary	5.08 per week.
Germany	9.02 per week.	China	1.31 per week.
France	7.25 per week.		

A recent National Industrial Conference Board Bulletin shows that the average American wage at the present time is approximately $22 per week.

Recent Tendency to Shift to Daywork

During the past two years many plants in the automotive industry have changed their wage incentive from group bonus or piecework to daywork. This day-rate plan usually includes a graduated rate scale from which the employee's hourly rate is determined by his productive efficiency as reported by approximately the same standard as used under the wage incentive plan. This change has given rise to the subject of this article.

Such a change brings up many questions to our mind. We shall endeavor in the following paragraphs to review some of the answers and reactions obtained in discussing this apparent trend with experienced engineers in many different industries.

Increase of Supervision Cost Likely

The first conclusion usually reached by all those considering these questions is that supervision costs will immediately rise due to the fact that under an incentive plan the foreman could give a large portion of his attention to quality and schedule problems, while under the daywork plan he still has these problems in addition to that of getting his output requirements and striving to hold down costs.

It is a question in some minds if the foreman who has been in industry only under the wage incentive plan will know how to supervise and get production under a daywork plan. Undoubtedly a new type of leadership and a new fund of knowledge will need be accumulated by many factory foremen if all industry is to change from a wage incentive to a straight daywork basis.

Incentive Plans Have Not Been Properly Operated

Industry is not without blame in this as well as other reactive changes of the past few years. Too many factory executives are under the opinion that the installation of a wage incentive plan will solve all of their difficulties and they neglect it and allow it to become "run-over at the heels" before they realize that it requires intelligent supervision.

In seeking the responsibility for such a change, we can only come to the conclusion that it rests mainly with management, as management has always been responsible for the installation and operation of the wage incentive plans. It seems reasonable, therefore, to conclude that it is also responsible for faults which may develop in such a plan and would, therefore, be responsible for correcting such faults.

Where management has adopted unsatisfactory wage plans, i.e. unsuitable to its manufacturing conditions and products, that management is then responsible for the dissatisfaction resulting therefrom. Too many corporations made blanket installations of group bonus or some other wage incentive plan without regard to the employee's interest and opinion, or the economical operation of the plan. This always reminds me of my experience in the Army when the Quartermaster tossed me a shirt, pair of pants, hat, and shoes, and told me to take it or leave it. Such conditions have resulted in the attitude of employees, and the subsequent attitude of labor leaders, toward the industries using such tactics. Too often management in the past has met these opinions and reactions with the mere statement that they are wrong or radical, and has not given them consideration by analyzing them to find the real facts on which improvements can be made in the administration of the wage plan.

Some Objections to Group Incentive Plans

Apparently the bulk of the reaction and subsequent change in incentive systems has been in those plants employing the group wage payment plan. One of its faults is usually found to be a lack of recognition of individual ability and performance. This leads to the attitude on the employee's part that the group bonus system is unfair to the ambitious worker. We have found that a great majority of men under the wage incentive plan would prefer to work under the individual basis, as they felt that it provided a greater opportunity for them to build up their earnings. In one large plant, where it is felt that the wage incentive plan is fairly administered, they have had some requests to change their group bonus plan to individual piecework, but have had no requests to change it to daywork. Another fault of the group system is to include too many employees in a group. Because of this the in-

dividual workers have lost sight of each other, have lost interest in each other's work, and this has minimized the incentive.

The question has been raised as to whether the group system of payment actually restricts output. It might be said that this exists in some groups because of the fact that the group incentive itself tends to level the standard of output among a number of employees, especially when they are all given an equal rate in the group, thus sharing equally in the earnings. Some plants have found it a good policy to vary the rates, giving the best rates to the group worker showing the best output and quality record.

Another factor which would tend to restrict output under the group plan is the existence of a high standard time or piecework rate. Under the individual system most pieceworkers will protect a high rate by restricting their output in order not to make unusual earnings. If a group of ten or fifty men are operating under a high standard time (or piecework base), they will usually restrict their output to what is believed to be an acceptable earning and this of course results in a restricted output on a much larger scale.

Reasons for Current Trend

Some people are under the opinion that the labor situation of the past two years has been largely responsible for the change we are discussing. Without a doubt this has had a great deal to do with it in some plants. But there are other factors which are not so prominent and yet which are very effective. In the automotive industry the conveyorized processes have to a large extent minimized the effect and need of wage incentive plans. One large manufacturer has never used anything but daywork and his production costs compare very favorably with any of those using wage incentive plans. We believe that with the return of a strong labor market, such as we had seven to ten years ago, some of these same reactions to wage incentive plans would have developed regardless of the influence of organized labor.

Another condition which has helped bring about a reaction to wage incentives is the fact that several of the major industries of the country have always operated on a daywork basis and have therefore never had many of the problems of operating wage

incentives, which makes these industries stand out in contrast to those using the incentive plan.

It is *not* a fact that all factory employees are opposed to the use of incentives. Many of them have expressed themselves by various means to the effect that a fair piecework system is desirable as it permitted the best men to make the most money. A union man reported that when one of the speakers at his local stated that piecework must go, there was very little applause from employees working in the piecework shops.

Someone has asked "Could a suitable straight day-rate plan be substituted for an incentive plan and obtain equal production?" As stated previously, production under the daywork plan depends greatly upon supervision. The setting of standards and a measurement of performance under a day-wage system has been found to be just as practicable as under a piecework system. It has not been found to be as effective in realizing the productivity by paying approximately the same earning wage. Some experiences in this line have shown that without the pressure of supervision the productivity per man tapers off until it soon reaches the level of the regular daywork employee.

A Feature of Wage Incentive Plans Which Need Remedying

There is one bad fault which has been found in wage incentive plans that has not been given proper recognition. It is the penalty imposed upon the worker because of faulty material, tools, stock deliveries, and other delays. Too frequently foremen and others higher up have taken the attitude that the pieceworker must take the breaks, and have failed to consider that he is losing money which he gained by working unusually hard. This naturally creates a resentment against the wage incentive and it is declared by him to be unfair, while in reality this is due to the negligent attitude of those in charge.

Our conclusion must therefore be that, under the incentive plan, interruptions to the production routine usually fall as a penalty upon the worker, while under the day-wage plan they are a penalty on the company. Under either plan, therefore, it is a responsibility for the supervision in charge to prevent such losses.

It must be remembered that employees themselves see definite advantages in working under the incentive plan. One piecework recently made the statement that he felt that piecework even under the depression conditions gave him a chance to show his boss that he was a good producer, and he was sure that his boss would not lay off his best men. Another man made the statement that under an incentive every man is his own boss, he is in business for himself. On a daywork plan he usually does what he is told and sets his own pace in doing it. We therefore come to the conclusion that the incentive wage plan serves to keep the productive system well oiled and if management does their part in keeping it well organized it will function smoothly.

Someone has asked if anything has happened during the depression to make incentive systems less advantageous to employer or to employee. It may be that some student of sociology or economics can point out such a change. It seems to us, however, that the changes which have taken place are purely physical or mechanical and easily reognized. Many plants today find themselves manufacturing a great variety of small quantity lots where previously real mass production prevailed. Some industries have been able to mechanize their production flow. Others have had to abandon such a plan. Any of these changes has a very great influence on the operation of the wage incentive system and it should not be allowed to lag behind such changes.

Some Likely Changes in Incentive Plans

In discussing present day-wage incentive problems with labor leaders, they tell us, in no uncertain words, that there are changes which must be made to bring about less variation in earnings,—such as higher guaranteed piece rates, less drastic standards of performance, and a more even distribution of wages during the year. There are several indications abroad that in all branches of labor a general opinion prevails that within each trade there should be a more uniform distribution of wages. This applies both to the hourly and weekly rates.

Probably one reason why the daywork system appeals to many people as a solution to our wage problem is because it can be quickly and universally adopted to all industries. This stands out in contrast to the fact that wage incentives are applied in endless

varieties because executives in every industry feel that their own conditions are so different as to warrant special application.

The use of wage incentives develops three problems; a method of measurement, a unit of credit, and a means of recording and checking the earned credits. Many costly leaks in the wage incentive system have been discovered in discrepancies in one of these three angles.

Before we rush about and begin to make drastic changes from incentives to daywork, throwing over all that we have accomplished, let us sit down calmly and take an inventory of our problems and troubles with the present plan and make such eliminations and corrections of any unfairness that will make our wage incentive fit the present operating conditions, keeping before us these questions: "What really will be gained by such a drastic change?" "Will costs increase?" "Will wages be raised?" "Will the worker have an easier day's work?" "Will it save in clerical pay roll and accounting expense?" Chances are most of these will be answered in the negative and we will conclude that the use of properly applied wage incentives is best suited to conditions in American industry.

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